Integration between Management Capability and Relationship Capability to Boost Supply Chain Project Performance

Boy Yuliadi[#1], Andi Nugroho[#2]
[1,2]Department of Computer Science, Universitas Mercu Buana, South Meruya Jakarta, Indonesia
boy.yuliadi@mercubuana.ac.id[1], andi.nugroho@mercubuana.ac.id[2]

Abstract--- In the current decade, supply chain companies are focusing on project management to increase the performance. The companies are struggling with different issues related to the project management. These issues have adverse effect on supply chain project performance. The important issues include; information communication technology (ICT), management capabilities and relationship capabilities. However, these issues can be resolved with the help of information communication technology (ICT). Therefore, the objective of this study is to examine the role of information communication technology (ICT) in supply chain project success. To achieve this objective, primary data is collected from supply chain companies in Indonesia. The employees of these companies were communicated to get data. For this purpose, a survey was carried out in which survey instrument was used for data collection. Results of the study demonstrated that information communication technology (ICT) has the ability to decrease various issues such as management capabilities and relationship capabilities and promote supply chain project success. Information communication technology (ICT) helps to transfer the possible effect of management capabilities and relationship capabilities on supply chain project performance.

Keywords: *Supply chain, management capabilities, relationship capabilities, information communication technology (ICT), project management.*

1. Introduction

Project management is an important field of management studies [1–4]. It has significant important in business success [5,6]. Success of projects has important role to promote business success, however, failure of project lead towards the business failure. That is why now the supply chain companies are focusing on project success to get success in overall business activity. These projects are also more important in supply chain.

In the current decade, supply chain companies are focusing on project management to increase the performance. As the performance of supply chain companies is crucial to get success [7,8], therefore, companies are trying to adopt various strategies to get success in supply chain projects [9]. Thus, project management is most crucial in supply chain company's success.

However, the companies are struggling with different issues related to project management [9,10]. Increase in issues decreases the project success. Most of the companies are facing the issues of management capabilities and relationship capabilities [12]. As the management capabilities are most crucial in success [12–14]. Additionally, relationship capabilities are also equally important in success [15–17]. Furthermore, companies are also facing the issues related to enterprise risk management [19].

Figure 1 indicates various challenges of project management. It is evident that in all challenges, relationship is most crucial which disturbs the whole project. As the communication between project team is most important [19–21]. Therefore, information communication technology (ICT) has important role in supply chin project management success. Information communication technology (ICT) creates the link between managers, owners and other employees [23].

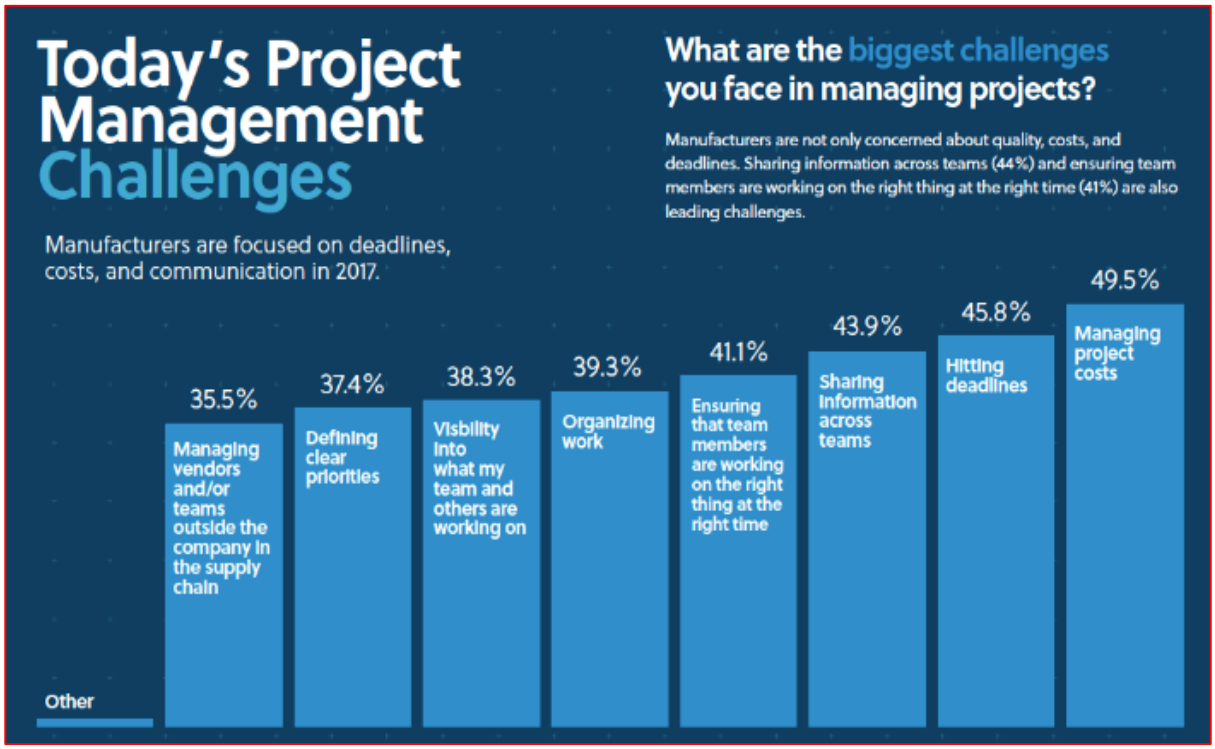

Figure 1. Project Management Challenges

Therefore, the objective of this study is to examine the role of information communication technology (ICT) in supply chain project success. Additionally, the other sub-objectives are as follows;

1. To examine the relationship between management capabilities, information communication technology (ICT) and supply chain project success.
2. To examine the relationship between relationship capabilities, information communication technology (ICT) and supply chain project success.
3. To examine the mediating role of information communication technology (ICT).

The current study contributed by investigating the role of management capabilities and relationship capabilities in supply chain project performance. Various studies investigated the project management practices [23–25] and supply chain practices [26,27], however, they did not consider the supply chain project success. Thus, this study contributed by investigating the phenomenon of supply chain project success.

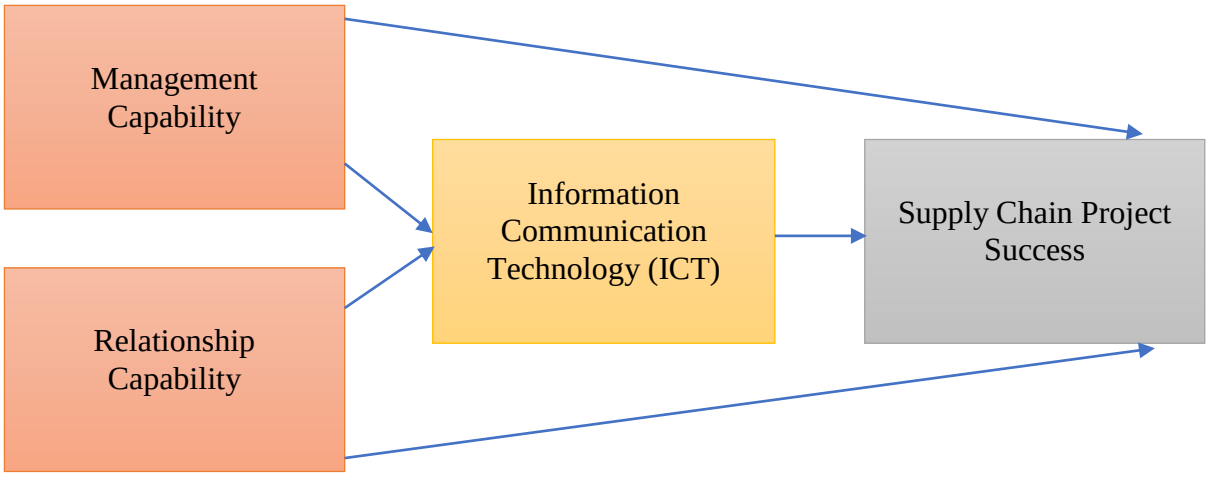

Figure 2. Proposed framework of the current study

2. Literature Review

There are numerous ways to measure the success of projects. Generally, a project performance measure includes three components; time, cost as well as quality [29]. This criteria of three components; time, cost, and quality have been used for assessment of the project's success from a long time [30].

Cost is one of the criteria for activities related to success which incorporates the underlying capital cost, the operation cost and project handling costs. Cost is a primary concern amid to undertaking the project life cycle and can be viewed as a most vital parameters of a task with main force of venture success [30]. Cost is basically as the contrast between genuine undertaking cost and its cost limit. This circumstance happens when the real undertaking cost of project surpasses the projected cost. The cost limit is the maximum spending that the client is ready to experience on a complete project [31].

The second element is project time. The time spend on allocation of assets, materials and other work is comes under project time. It is generally assessed by comparing the time allocated and real time spend on a project. It happens when the advancement of an agreement falls behind its planned program. It may be caused by any party to the contract and may be a direct result of one or more circumstances [32]. Delay in contract has negative results on both contractual worker and proprietor either in the frame additional cost or incomes lost and this will prompt the questionable issue [33]. These issues effect negatively on project success.

The third criteria are project quality. Specification of quality necessities in the design as well as contract certification becomes really significant with the attention to confirm as the measure of quality while doing project [34]. Therefore, these three elements; cost, time and quality have significant importance in project success [34–36]. Project success elements are shown in Figure 4.

Figure 4. Project Success Elements

2.1 Management Capabilities and Supply Chain Project Success

Management capability is picked as one of the primary variables since management is the coordination of all resources through the way toward arranging, sorting out, driving and controlling so as to accomplish process targets [38]. Past examinations have characterized management capability and administrative capability with respect to resources and making key vision. [39] recommended that management capability is the

administrative capacity to make utilization of the vital asset since the ownership of an asset or capability does not really imply that the asset is really used. Management capability is essential having the capacity to make a key vision for the organization, communicate all through the organization to facilitate workforce to accomplish the goals [40].

[41] examined the consequence of management capability of company on time as well as cost performance of nominated projects. They highlighted that capability of contractor's management has important influence on cost as well as time performance of projects. Furthermore, firm's performance is key to project success [42]. Management below satisfaction level may lead to poor follow-up of development, improper supply of works, non-commitment of workers and poor inspection of project.

Various studies found that management capabilities has positive relationship with project performance [41–45]. Therefore, management capabilities have positive relationship with supply chain project success.

H_1: Management capabilities have positive relationship with supply chain project success.

2.2 Relationship Capabilities and Supply Chain Project Success

Relationship capability criteria must be fulfilled to produce higher performance of the resources owned by the company [39]. This capability identifies with the knowledge of the necessities related to the market place and its customers. One of its definition is the integrative procedures intended to apply aggregate information and resources of the firm to fulfil related necessities of the business, empowering the business to increase the value of its products and ventures, adjust to economic situations, exploit openings and meet threats from environment [47]. Relationship capability is a critical source of competitive advantage for firms [48] which could enhance monetary performance [49] of supply chain projects.

According to the literature, relationship is one of the strategic weapons which has the ability to generate or sustain competitive advantages to help supply chain company's performance [50]. Therefore, it has the ability to support companies [49–51]. Therefore, relationship capabilities have positive relationship with supply chain project performance.

H_2: Relationship capabilities have relationship with supply chain project success.

2.3 Information Communication Technology (ICT) and Supply Chain Project Success

Information communication technology (ICT) has vital role within the organization and outside the organization. It is most appropriate way to foster the relationship between management to management, management to employees and employees to customers which effect positively on business. Therefore, it builds the relationship [52–55].

It facilitates the project employees to communication effectively and communicate various issues and opportunities related to the project. It also facilitates the relationship between customers. The relationship with customers also has significant role in project success. As indicated by studies that information technology has significant role in project performance [12], [52,53]. Therefore, below hypotheses are proposed;

H_3: Information communication technology (ICT) has relationship with supply chain project success.

H_4: Management capabilities have relationship with information communication technology (ICT).

H_5: Relationship capabilities have relationship with information communication technology (ICT).

H_6: Information communication technology (ICT) mediates the relationship between management capabilities and supply chain project success.

H_7: Information communication technology (ICT) mediates the relationship between relationship capabilities and supply chain project success.

3. Methodology

The current study adapted various measures from previous literature to examine the effect of relationship capabilities, management capabilities and information communication technology (ICT) on supply chain project success. Few changes were made in the items based on the suitability of industry. Table 1 shows the measures related to project success, Table 2 shows the measures related to management capabilities and Table 3 shows the measures related to the relationship capabilities.

Additionally, the measures for information communication technology (ICT) are adapted from [7]. All the items were rated on the 7-point scale to get the response from employees of supply chain

companies. The employees working in projects were selected as respondents. Measures for project success are adapted from [58,59]. Measures for management capabilities are adapted from [60–63]. Finally, the measures for relationship capabilities are adapted from [62].

For data collection purpose, 200 questionnaires were distributed in Indonesian supply chain companies. Total 140 questionnaires returned and used to get end results. Moreover, structural equation modeling is used for data analysis [66].

Table 1. Project Success Measures

	Variables	Source
1.	Budget performance (within budget/cost)	Ashley, Lurie, and Jaselskis (1987)
2.	Schedule (Timely completion)	Nguyen, Ogunlana, and Lan (2004)
3.	Functionality (according to specification)	Ashley *et al*., (1987)
4.	Quality	Nguyen *et al*., (2004)
5.	Safety	Nguyen *et al*., (2004)

Table 2. Management Capabilities Measures

	Variables	No of items	Source
1.	Competence	3	Toor and Ogunlana (2008)
2.	Cooperation	3	Phua and Rowlinson, (2004)
3.	Commitment	3	Toor and Ogunlana (2008)
4.	Methodology	5	Benjamin (2006)
5.	IT Systems	3	Abdul-Kareem and Abu-Bakar (2011)

Table 3. Relationship Capabilities Measures

	Variables	No of items	Source
1.	Comprehension	4	Thor and Ogunlana (2008)
2.	Communication	3	Toor and Ogunlana (2008)

4. Data Analysis

Factor loading is the internal item consistency. Internal item consistency is required to examine before PLS bootstrapping for hypotheses testing. It is clear from Figure 4 and Table 4 that all the items have internal item consistency is above 0.7 [67]. Moreover, average variance extracted (AVE) shows the external consistency. Its value should be above 0.5 to attain convergent validity. In the current study, it is above 0.7. Additionally, composite reliability for all constructs is also above 0.7.

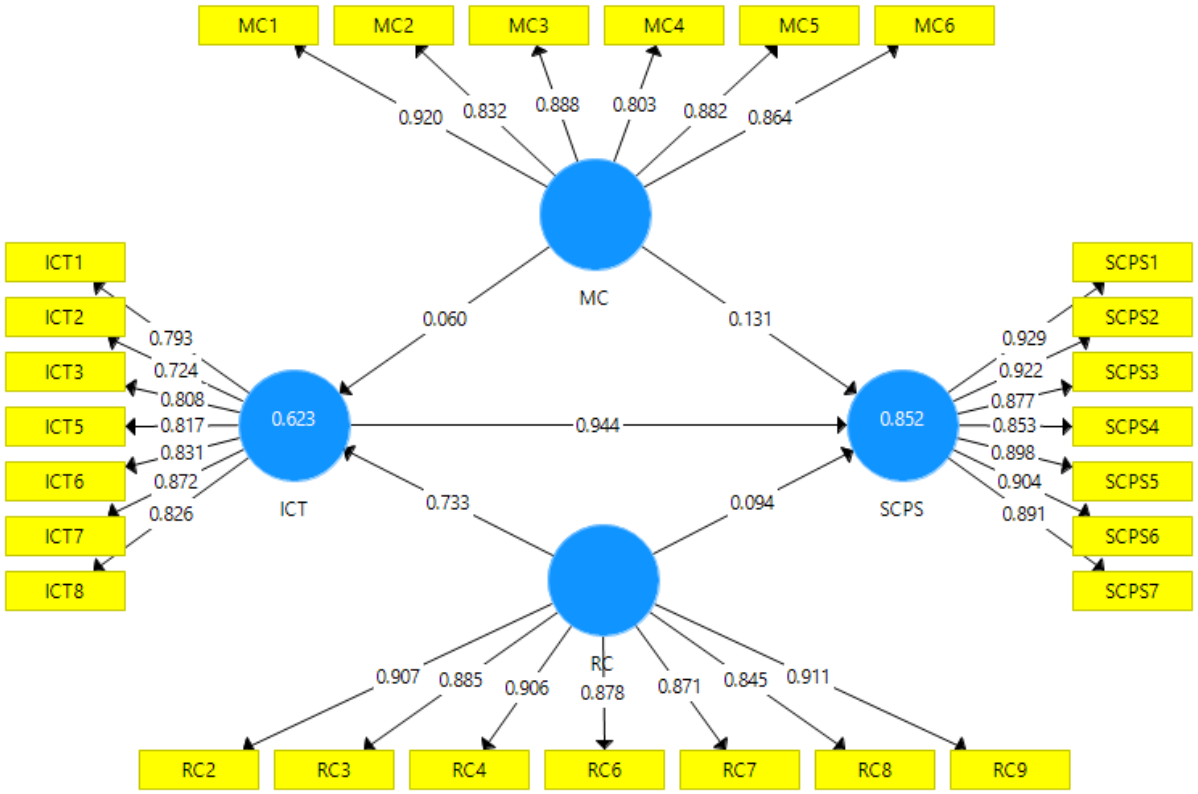

Figure 5. Outer Model Assessment

Table 4. Factor Loadings

	ICT	MC	RC	SCPS
ICT1	0.793			
ICT2	0.724			
ICT3	0.808			
ICT5	0.817			
ICT6	0.831			
ICT7	0.872			
ICT8	0.826			
MC1		0.92		
MC2		0.832		
MC3		0.888		
MC4		0.803		
MC5		0.882		
MC6		0.864		
RC2			0.907	
RC3			0.885	
RC4			0.906	
RC6			0.878	
RC7			0.871	
RC8			0.845	
RC9			0.911	

SCPS1	0.929
SCPS2	0.922
SCPS3	0.877
SCPS4	0.853
SCPS5	0.898
SCPS6	0.904
SCPS7	0.891

Table 5. Measurement Model Results

	α	**rho_A**	**CR**	**(AVE)**
ICT	0.913	0.916	0.931	0.658
MC	0.933	0.937	0.947	0.749
RC	0.954	0.957	0.962	0.786
SCPS	0.959	0.960	0.966	0.803

Table 6. Average Variance Extracted Square Root

	ICT	**MC**	**RC**	**SCPS**
ICT	***0.811***			
MC	0.736	***0.865***		
RC	0.789	0.821	***0.886***	
SCPS	0.721	0.65	0.718	***0.896***

Inner model is assessed with the help of PLS to test the relationship between different independent variables (management capabilities, relationship capabilities), mediating variable (information communication technology) and dependent variable (supply chain project success). It is found that relationship between both independent variables and supply chain project success is significant positive with t-value 2.233 and 4.76, respectively. Moreover, the relationship of management capabilities and relationship capabilities with supply chain project success is also significant with t-value 3.375 and 4.955. Information communication technology (ICT) also found positive relationship with supply chain project success with t-value 10.073.

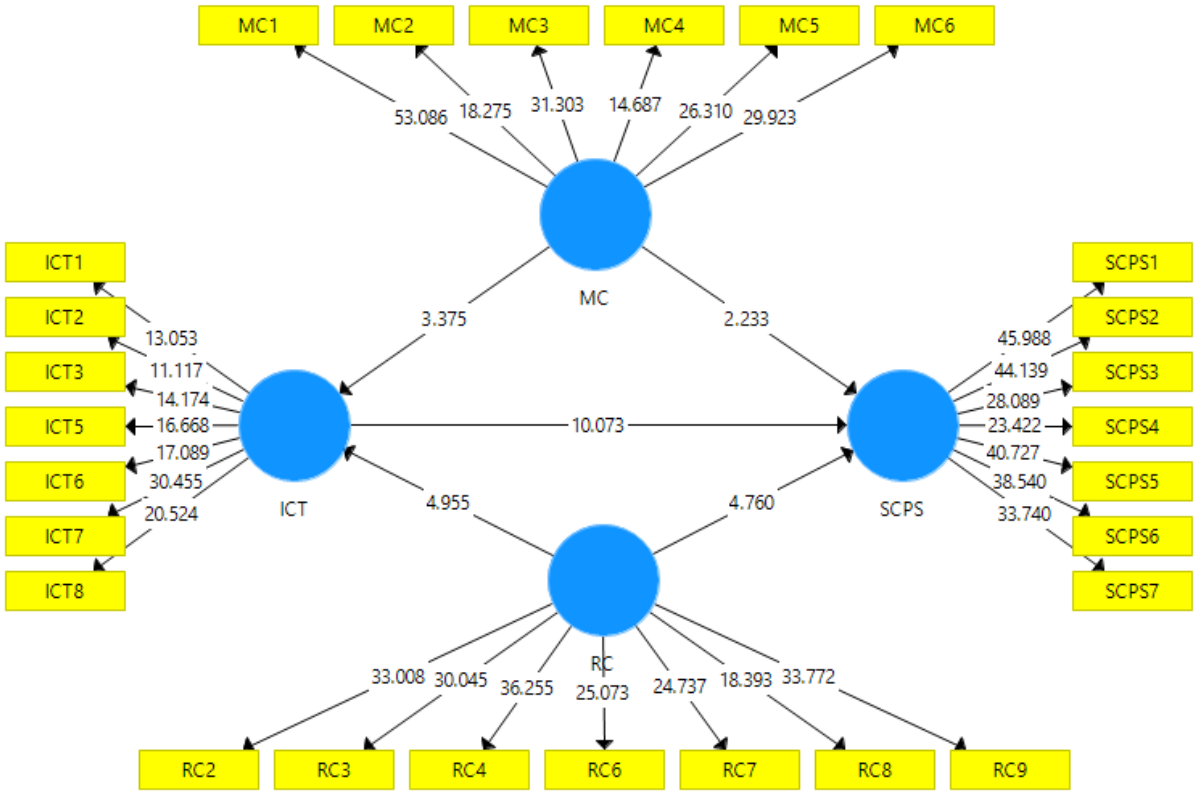

Figure 6. Inner Model Assessment

Table 7. Direct Effect

	(O)	(M)	(STDEV)	T Statistics	P Values
ICT -> SCPS	0.944	0.929	0.094	10.073	0
MC -> ICT	0.06	0.065	0.018	3.375	0.002
MC -> SCPS	0.131	0.133	0.06	2.233	0.038
RC -> ICT	0.733	0.735	0.148	4.955	0
RC -> SCPS	0.094	0.113	0.02	4.76	0

This study found that, mediation effect is only significant between the relationship of relationship capabilities and supply chain project success as the t-value is 4.489 and positive beta value. However, mediation effect between management capabilities and supply chain project performance is not significant. Thus, H_7 is supported but H6 is not supported.

Table 8. Mediation Effect

	(O)	(M)	(STDEV)	T Statistics	P Values
MC -> ICT -> SCPS	0.057	0.058	0.15	0.38	0.704
RC -> ICT -> SCPS	0.692	0.683	0.154	4.489	0

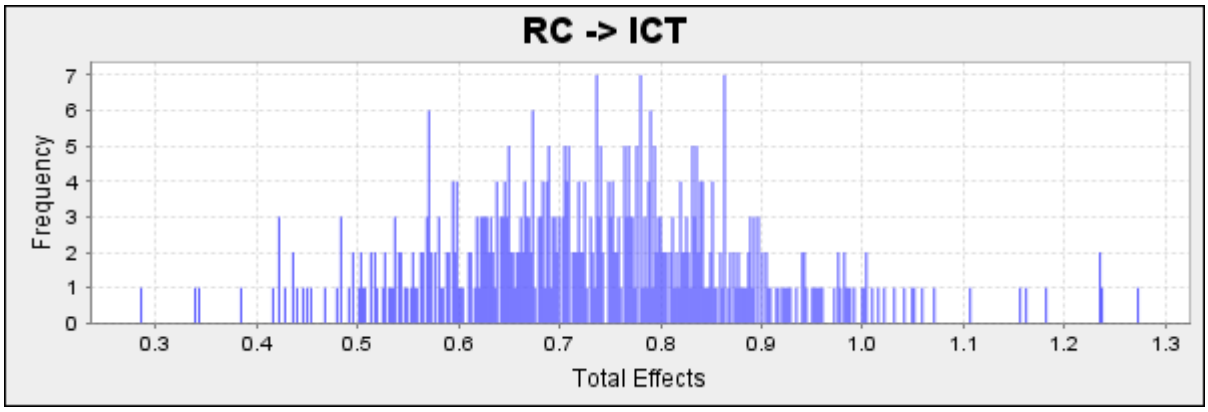

Figure 7. Mediation effect of information communication technology (ICT) between relationship capabilities and supply chain project success (histogram)

In the current study, variance explained is 0.852 in case of supply chain project performance. It indicates that, management capabilities, relationship capabilities and information communication technology (ICT) have the ability to bring 85.2% change in supply chain project performance which is strong variance [68]. In case of information communication technology (ICT), variance explained is 0.623. It is given in Table 9.

Table 9. Variance Explained

	Variance Explained
Supply Chain Project Success	0.852
Information Communication Technology (ICT)	0.623

5. Conclusion

Issues in project management has important role in project success. It causes to the failure of project. However, better management of issues lead towards higher performance. Therefore, by considering the higher importance of project management, the supply chain companies were selected to investigate various project issues and solution of these issues.

While examining the previous studies, it is found that management capabilities and relationship capabilities are the most crucial issues in supply chain project management in Indonesia. To address these issues, information communication technology (ICT) is taken as solution to these issues. It is found that, effective management of management capabilities and relationship capabilities have positive effect on project success. It increases the project performance. However, ineffective management of management capabilities and relationship capabilities leads to the failure of project. These issues can be handled with the help of information communication technology (ICT). Good communication system between the employees, workers, managers and owners has the ability to decrease various project management issues and increases the supply chain project performance. Information communication technology (ICT) transfer the positive effect of management capabilities and relationship capabilities towards supply chain project success. Therefore, information communication technology (ICT) increases the supply chain project success with the help of management capabilities and relationship capabilities. Hence, the Indonesian supply chain companies should focus on information communication technology (ICT) to resolve various issues of management capabilities and relationship capabilities.

References

[1] H. Kerzner, *Project management best practices: Achieving global excellence*. John Wiley & Sons, 2018.

[2] H. Kerzner and H. R. Kerzner, *Project management: a systems approach to planning, scheduling, and controlling*. John Wiley & Sons, 2017.

[3] H. Al-Qassab, A. Paucar-Caceres, G. Wright, and R. Pagano, "Sustainability and Green Project Management Skills: An Exploratory Study in the Construction Industry in Dubai," in *Social Responsibility and Sustainability*, Springer, 2019, pp. 223–239.

[4] Y. Wang and H. Feng, "Customer relationship management capabilities: Measurement, antecedents and consequences," *Manag. Decis.*, vol. 50, no. 1, pp. 115–129, 2012.
[5] A. Badewi, "The impact of project management (PM) and benefits management (BM) practices on project success: Towards developing a project benefits governance framework," *Int. J. Proj. Manag.*, vol. 34, no. 4, pp. 761–778, 2016.
[6] Y. Petro and P. Gardiner, "An investigation of the influence of organizational design on project portfolio success, effectiveness and business efficiency for project-based organizations," *Int. J. Proj. Manag.*, vol. 33, no. 8, pp. 1717–1729, 2015.
[7] S. Nadeem, A. K. Alvi, J. Iqbal, and others, "Performance Indicators of E-Logistic System with mediating role of Information and Communication Technology (ICT)," *J. Appl. Econ. Bus. Res.*, vol. 8, no. 4, pp. 217–228, 2018.
[8] W. Ul-Hameed, H. Mohammad, H. Shahar, A. Aljumah, and S. Azizan, "The effect of integration between audit and leadership on supply chain performance: Evidence from UK based supply chain companies," *Uncertain Supply Chain Manag.*, vol. 7, no. 2, pp. 311–328, 2019.
[9] C. Doktoralina and A. Apollo, "The contribution of strategic management accounting in supply chain outcomes and logistic firm profitability," *Uncertain Supply Chain Manag.*, vol. 7, no. 2, pp. 145–156, 2019.
[10] R. G. Cooper and A. F. Sommer, "Agile--Stage-Gate for Manufacturers: Changing the Way New Products Are Developed Integrating Agile project management methods into a Stage-Gate system offers both opportunities and challenges.," *Res. Manag.*, vol. 61, no. 2, pp. 17–26, 2018.
[11] Akeju, K. F. (2018). Informal Sector and Tax Compliance: The Role of Associational Membership in South West, Nigeria. International Journal of Applied Economics, Finance and Accounting, 3(1), 1-9.
[12] J. Baderisham, "The extent of management capability, relationship capability, and competitive advantage influence on Bumiputera contractors' project performance," University Utara Malaysia, 2013.
[13] M. Tracey, J.-S. Lim, and M. A. Vonderembse, "The impact of supply-chain management capabilities on business performance," *Supply Chain Manag. An Int. J.*, vol. 10, no. 3, pp. 179–191, 2005.
[14] S.-Y. Lee and R. D. Klassen, "Drivers and enablers that foster environmental management capabilities in small-and medium-sized suppliers in supply chains," *Prod. Oper. Manag.*, vol. 17, no. 6, pp. 573–586, 2008.
[15] K. P. Grant and J. S. Pennypacker, "Project management maturity: An assessment of project management capabilities among and between selected industries," *IEEE Trans. Eng. Manag.*, vol. 53, no. 1, pp. 59–68, 2006.
[16] Amfani-Joe, C. E., Okonkwo, L., & Osagede, E. A. (2018). Socio-demographic Structures of Families as Predictors of Time Management by Working Housewives in the Federal Capital Territory (FCT), Abuja, Nigeria. International Journal of Social Sciences Perspectives, 3(1), 1-6.
[17] Z. Wang and H. G. Kim, "Can social media marketing improve customer relationship capabilities and firm performance? Dynamic capability perspective," *J. Interact. Mark.*, vol. 39, pp. 15–26, 2017.
[18] E. Rekarti and C. M. Doktoralina, "Improving Business Performance: A Proposed Model for SMEs," *Eur. Res. Stud. J.*, vol. 20, no. 3, pp. 613–623, 2017.
[19] W. U. Hameed, F. Hashmi, M. Ali, and M. Arif, "Enterprise risk management (ERM) system: Implementation problem and role of audit effectiveness in Malaysian firms," *Asian J. Multidiscip. Stud.*, vol. 5, no. 11, 2017.
[20] T. J. Allen, D. M. S. Lee, and M. L. Tushman, "R&D performance as a function of internal communication, project management, and the nature of the work," *IEEE Trans. Eng. Manag.*, no. 1, pp. 2–12, 1980.
[21] Almeqdadi, F. (2018). The Effects of Using an Interactive Software (GSP) on UAE Students' Attitudes towards Geometry. Humanities, 3(1), 22-28.
[22] R. Müller and J. R. Turner, "The impact of principal--agent relationship and contract type on communication between project owner and manager," *Int. J. Proj. Manag.*, vol. 23, no. 5, pp. 398–403, 2005.
[23] V. Ahuja, J. Yang, and R. Shankar, "Benefits of collaborative ICT adoption for building project management," *Constr. Innov.*, vol. 9, no. 3, pp. 323–340, 2009.
[24] J. Binder, *Global project management: communication, collaboration and management across borders*. Routledge, 2016.
[25] M. G. Kaiser, F. El Arbi, and F. Ahlemann, "Successful project portfolio management beyond project selection techniques: Understanding the role of structural alignment," *Int. J. Proj. Manag.*, vol. 33, no. 1, pp. 126–139, 2015.

[26] C. E. M. Serra and M. Kunc, "Benefits realisation management and its influence on project success and on the execution of business strategies," *Int. J. Proj. Manag.*, vol. 33, no. 1, pp. 53–66, 2015.
[27] A. Scavarda, G. L. Daú, L. F. Scavarda, and A. L. Korzenowski, "A proposed healthcare supply chain management framework in the emerging economies with the sustainable lenses: The theory, the practice, and the policy," *Resour. Conserv. Recycl.*, vol. 141, pp. 418–430, 2019.
[28] F. Zand, S. Yaghoubi, and S. J. Sadjadi, "Impacts of government direct limitation on pricing, greening activities and recycling management in an online to offline closed loop supply chain," *J. Clean. Prod.*, vol. 215, pp. 1327–1340, 2019.
[29] M. Kagioglou, R. Cooper, and G. Aouad, "Performance management in construction: a conceptual framework," *Constr. Manag. Econ.*, vol. 19, no. 1, pp. 85–95, 2001.
[30] A. P. C. Chan, D. Scott, and E. W. M. Lam, "Framework of success criteria for design/build projects," *J. Manag. Eng.*, vol. 18, no. 3, pp. 120–128, 2002.
[31] O. Jackson and O. Steven, "Management of cost overrun in selected building construction project in Ilorin," *Rev. Bus. Financ.*, vol. 3, no. 1, pp. 1–8, 2001.
[32] A. H. Memon, I. A. Rahman, and A. A. A. Azis, "Time and cost perfomance in costruction projects in Southern and Cenrtal regions of Penisular Malaysia," *Int. J. Adv. Appl. Sci.*, vol. 1, no. 1, pp. 45–52, 2012.
[33] M. I. Abbas, "Causes and effects of delays in Aceh construction industry," *vol. Masters Thesis Univ. Teknol. Malaysia*, 2006.
[34] A. Rasli, H. T. Huam, W. Mohd, W. Maseri, and A. Asmi, "The effects of information technology infrastructure capability on project performance in the Malaysian construction industry," in *2nd International Conference on Business and Economic Research (ICBER2011), Langkawi*, 2011, pp. 14–16.
[35] Audu, T. A. (2018). Effects of Teaching Methods on Basic Science Achievement and Spatial Ability of Basic Nine Boys and Girls in Kogi State, Nigeria. Humanities and Social Sciences Letters, 6(4), 149-155.
[36] P. D. Gardiner and K. Stewart, "Revisiting the golden triangle of cost, time and quality: the role of NPV in project control, success and failure," *Int. J. Proj. Manag.*, vol. 18, no. 4, pp. 251–256, 2000.
[37] K. K. Aggor, "Relationship Between Budget and Project Success Factors in the Ghanaian Building Construction Sector," 2017.
[38] R. O. Abiola and R. Oladele, "Management Implications of Trends in the Construction Costs in Nigeria from 1989-1999," *Quant. Surv.*, vol. 30, pp. 35–40, 2000.
[39] J. Andersén, "Strategic resources and firm performance," *Manag. Decis.*, vol. 49, no. 1, pp. 87–98, 2011.
[40] A. Lopez-Cabrales, R. Valle, and I. Herrero, "The contribution of core employees to organizational capabilities and efficiency," *Hum. Resour. Manag. Publ. Coop. with Sch. Bus. Adm. Univ. Michigan alliance with Soc. Hum. Resour. Manag.*, vol. 45, no. 1, pp. 81–109, 2006.
[41] O. I. Aje, K. T. Odusami, and D. R. Ogunsemi, "The impact of contractors' management capability on cost and time performance of construction projects in Nigeria," *J. Financ. Manag. Prop. Constr.*, vol. 14, no. 2, pp. 171–187, 2009.
[42] A. H. Ghapanchi and A. Aurum, "The impact of project capabilities on project performance: Case of open source software projects," *Int. J. Proj. Manag.*, vol. 30, no. 4, pp. 407–417, 2012.
[43] Azad, A. M. S., Raza, A., & Zaidi, S. S. Z. (2018). Empirical relationship between operational efficiency and profitability (Evidence from Pakistan Exploration Sector). Journal of Accounting, Business and Finance Research, 2(1), 7-11.
[44] C. P. Killen, R. A. Hunt, and E. J. Kleinschmidt, "Learning investments and organizational capabilities: Case studies on the development of project portfolio management capabilities," *Int. J. Manag. Proj. Bus.*, vol. 1, no. 3, pp. 334–351, 2008.
[45] P. Hadaya, L. Cassivi, and C. Chalabi, "IT project management resources and capabilities: a Delphi study," *Int. J. Manag. Proj. Bus.*, vol. 5, no. 2, pp. 216–229, 2012.
[46] C. Sauer, L. Liu, and K. Johnston, "Enterprise-level project management capabilities: a comparison of the construction and IT services industries," *ICIS 1999 Proc.*, p. 44, 1999.
[47] P. Guenzi and G. Troilo, "Developing marketing capabilities for customer value creation through Marketing--Sales integration," *Ind. Mark. Manag.*, vol. 35, no. 8, pp. 974–988, 2006.
[48] J. Fahy, "The resource-based view of the firm: some stumbling-blocks on the road to understanding sustainable competitive advantage," *J. Eur. Ind. Train.*, vol. 24, no. 2/3/4, pp. 94–104, 2000.
[49] D. Anggraini, "Application of Supply Chain Management Practices in Banks: Evidence from Indonesia," *Int. J Sup. Chain. Mgt Vol*, vol. 7, no. 5, pp. 418–427, 2018.
[50] Harwikarya, M. Sadikin, D. Fitrianah, M. M.

Sarinanto, I. Nurhaida, and A. R. Dwiyanto, "IS Strategic Plan for Higher Education Based on COBIT Assessment: A Case Study," *Int. J. Inf. Educ. Technol.*, vol. 5, no. 8, pp. 629–633, 2015.

[51] K. J. Trainor, J. M. Andzulis, A. Rapp, and R. Agnihotri, "Social media technology usage and customer relationship performance: A capabilities-based examination of social CRM," *J. Bus. Res.*, vol. 67, no. 6, pp. 1201–1208, 2014.

[52] M.-L. Tseng, M. K. Lim, W.-P. Wong, Y.-C. Chen, and Y. Zhan, "A framework for evaluating the performance of sustainable service supply chain management under uncertainty," *Int. J. Prod. Econ.*, vol. 195, pp. 359–372, 2018.

[53] M. L. Ouakouak, N. Ouedraogo, and A. Mbengue, "The mediating role of organizational capabilities in the relationship between middle managers' involvement and firm performance: A European study," *Eur. Manag. J.*, vol. 32, no. 2, pp. 305–318, 2014.

[54] O. Kuivalainen, K. Puumalainen, S. Sintonen, and K. Kyläheiko, "Organisational capabilities and internationalisation of the small and medium-sized information and communications technology firms," *J. Int. Entrep.*, vol. 8, no. 2, pp. 135–155, 2010.

[55] B. Donnellan, C. Sheridan, and E. Curry, "A capability maturity framework for sustainable information and communication technology," *IT Prof.*, vol. 13, no. 1, pp. 33–40, 2011.

[56] D. Govender and I. Govender, "The relationship between information and communications technology (ict) integration and teachers' self-efficacy beliefs about ict," *Educ. as Chang.*, vol. 13, no. 1, pp. 153–165, 2009.

[57] S. Ahmadi, A. Keshavarzi, and M. Foroutan, "The application of information and communication technologies (ICT) and its relationship with improvement in teaching and learning," *Procedia-Social Behav. Sci.*, vol. 28, pp. 475–480, 2011.

[58] L.-R. Yang, J.-H. Chen, and H.-W. Wang, "Assessing impacts of information technology on project success through knowledge management practice," *Autom. Constr.*, vol. 22, pp. 182–191, 2012.

[59] A. R. Peslak, "Information technology project management and project success," *Int. J. Inf. Technol. Proj. Manag.*, vol. 3, no. 3, pp. 31–44, 2012.

[60] L. Duy Nguyen, S. O. Ogunlana, and D. Thi Xuan Lan, "A study on project success factors in large construction projects in Vietnam," *Eng. Constr. Archit. Manag.*, vol. 11, no. 6, pp. 404–413, 2004.

[61] D. B. Ashley, C. S. Lurie, and E. J. Jaselskis, "Determinants of construction project success," 1987.

[62] S.-U.-R. Toor and S. O. Ogunlana, "Problems causing delays in major construction projects in Thailand," *Constr. Manag. Econ.*, vol. 26, no. 4, pp. 395–408, 2008.

[63] F. T. T. Phua and S. Rowlinson, "How important is cooperation to construction project success? A grounded empirical quantification," *Eng. Constr. Archit. Manag.*, vol. 11, no. 1, pp. 45–54, 2004.

[64] R. Benjamin, "Project Success as a function of Project Management Methodology: an emergent systems approach," *Unpubl. Master's thesis, Univ. Hull, UK*, 2006.

[65] H. I. A. Kareem and A. H. A. Bakar, "Identifying IT benefits for Malaysian construction companies," *J. Inf. Technol. Constr.*, vol. 16, no. 28, pp. 477–492, 2011.

[66] J. Henseler, C. M. Ringle, and R. R. Sinkovics, "The use of partial least squares path modeling in international marketing," in *New challenges to international marketing*, Emerald Group Publishing Limited, 2009, pp. 277–319.

[67] J. Hair, C. L. Hollingsworth, A. B. Randolph, and A. Y. L. Chong, "An updated and expanded assessment of PLS-SEM in information systems research," *Ind. Manag. Data Syst.*, vol. 117, no. 3, pp. 442–458, 2017.

[68] W. W. Chin, "The partial least squares approach to structural equation modeling," *Mod. methods Bus. Res.*, vol. 295, no. 2, pp. 295–336, 1998.